

## CLASS EXERCISES

Express each absolute value equation as a disjunction using the word *or*.

1.  $|x + 3| = 9$
2.  $|3x - 5| = 10$
3.  $|2x + 7| + 3 = 22$
4.  $|3x - 6| - 7 = 14$
5.  $|2x + 3| - 6 = 14$
6.  $|6 - 5x| = 18$

Determine whether each sentence is true or false. If a sentence is false, show why it is false.

7. If  $x \geq 0$ , then  $|x - 3| = 3 - x$
8. If  $x \leq 0$ , then  $|x - 3| = |3 - x|$
9. If  $x > 0$ , then  $|6 - x| = 6 - x$
10. If  $x < 0$ , then  $|-x - 8| = x + 8$
11. If  $x > 0$ , then  $|-x - 4| = x + 4$
12. If  $x < 0$ , then  $|9 - x| = 9 + x$

## PRACTICE EXERCISES

Solve and check. If an equation has no solution, so state.

1.  $|3x| = 18$
2.  $|5x| = 30$
3.  $|-4x| = 32$
4.  $|-9x| = 36$
5.  $|x - 3| = 9$
6.  $|x - 4| = 9$
7.  $|x + 2| = 0$
8.  $|x + 5| = 12$
9.  $|5y - 8| = 12$
10.  $|4y - 5| = 15$
11.  $|3x + 2| = 7$
12.  $|5y + 3| = 9$
13.  $2|w + 6| = 10$
14.  $3|x + 5| = 12$
15.  $3|2w - 1| = 21$
16.  $2|3w - 2| = 14$
17.  $|3x + 4| = -3$
18.  $|2x - 3| = -1$
19.  $|3x + 5| = 5x + 2$
20.  $|2x - 3| = 4x - 1$
21.  $|x + 4| + 3 = 17$
22.  $|y - 5| - 2 = 10$
23.  $|6y - 2| + 4 = 32$
24.  $|3x - 1| + 10 = 25$
25.  $-|4 - 8x| = 12$
26.  $-|2w - 6| = 10$
27.  $7|3 - 2y| = 56$
28.  $8|4 - 3y| = 48$
29.  $4|3x + 4| = 4x + 8$
30.  $6|2x + 5| = 6x + 24$
31.  $5|6 - 5x| = 15x - 35$
32.  $7|8 - 3x| = 21x - 49$
33.  $\frac{1}{2}|3x + 5| = 6x + 4$
34.  $\frac{1}{4}|4x + 7| = 8x + 16$

Solve for  $x$  and check. If an equation has no solution, so state. Assume that  $a$ ,  $b$ , and  $c$  represent positive real numbers.

35.  $|ax| - b = c$
36.  $|cx - d| = ef$
37.  $a|bx - c| = d$
38.  $|3x - a| = x + 1$
39.  $|x - 5| = 2x + 3a$
40.  $2|x - 6| = 4x + b$